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ABSTRACT

Knowledge of economic concepts and ideas and an ability to apply basic economic analysis to solve everyday problems are necessary for individuals to function as productive members of society. This framework is designed to assess the outcomes of student education in and understanding of economics in grade 12 as part of the National Assessment of Education (NAEP). The framework is based on a definition of economic literacy as the ability to identify, analyze, and evaluate the consequences of individual decisions and public policy. The content of the framework is grouped into three areas: (1) the market economy; (2) the national economy; and (3) the international economy. Assessing what students know and can do in economics offers an opportunity to measure their understanding and skills in a variety of daily events and problems. The NAEP economics assessment takes advantage of that opportunity by placing most of the assessment items in specific context and applications. Between 20-30% of the items are written in three contexts: (1) an individual and household context; (2) a business context; and (3) a public context. Students spend approximately 60% of their time on multiple-choice items, 30% on short constructed-response items, and 10% on extended constructed-response items. The framework uses the NAEP achievement-level criteria of Basic, Proficient, and Advanced to describe what students should know and be able to accomplish. An eight item reference list, sample items, and other materials are appended. (BT)

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ED 473 196

ASSESSMENT FRAMEWORK

2006 National Assessment of Educational Progress in Economics

SO 034 424

September 2002

Developed Under Contract Number ED01CO0130 for the National Assessment Governing Board by the American Institutes for Research, the National Council on Economic Education, and the Council of Chief State School Officers

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Executive Summary

The purpose of economic education is to enable individuals to function effectively both in their own personal lives and as citizens and participants in an increasingly connected world economy. Some knowledge of economic concepts and ideas and an ability to apply basic economic analysis to solve everyday problems are necessary for an individual to function as a productive member of society—as a worker, a saver, an investor, a consumer, or an active citizen.

This framework document provides a guide for the development of the 2006 National Assessment of Educational Progress (NAEP) Economics Assessment. The framework, together with *Assessment and Item Specifications: NAEP 2006 Economics* and *Recommendations on Background Variables: NAEP 2006 Economics Assessment*, makes explicit recommendations to the National Assessment Governing Board (NAGB) on the content and format of the assessment.

This framework is designed to assess the outcomes of students' education in and understanding of economics in grade 12 as part of NAEP. The framework is based on a definition of economic literacy as the ability to identify, analyze, and evaluate the consequences of individual decisions and public policy. Economic literacy includes an understanding of

- the fundamental constraints imposed by limited resources, the resulting choices people have to make, and the trade-offs they face;
- how economies and markets work and how people function within them; and
- the benefits and costs of economic interaction and interdependence among people and nations.

Economic literacy also includes having the skills that allow people to function effectively in their roles as consumers, producers, savers, investors, and responsible citizens. These skills include economic reasoning, problem solving, decision making, and the ability to analyze real-life situations.

The content of the framework is grouped for reporting purposes into three areas—the Market Economy, the National Economy, and the International Economy. The core ideas in the Market Economy content area, which makes up 45 percent of the assessment, are the relevance of limited resources, how buyers and sellers interact to create markets, how these markets allocate resources, and the economic role of government in a market economy. This category focuses on concepts such as scarcity, choice, opportunity costs, supply and demand, profit, competition, incentives, individual incomes, the comparison of benefits and costs in making decisions, and the evaluation of short-run and long run consequences of decisions.

The National Economy content area (40 percent of the assessment) includes an understanding the data that describe the overall conditions in the U.S. economy, the factors that cause changes in those conditions, and the appropriate policy alternatives. This category focuses onsuch concepts as unemployment, inflation, economic growth, money, gross domestic product (GDP), and the mechanics and the appropriate uses of monetary and fiscal policies.

The International Economy content area (15 percent of the assessment) includes an understanding of the reasons for individuals and businesses to specialize and trade and the rationale for specialization and trade across international borders; an ability to compare the benefits and costs of that specialization and resulting trade for consumers, producers, and governments; and an understanding that this trade brings additional complications. This category includes concepts such as voluntary exchange, specialization, interdependence, imports and exports, barriers to trade, and the process and consequences of exchange rate determination.

Assessing what students know and can do in economics offers an opportunity to measure their understanding and skills in a wide variety of important and daily events and problems. The NAEP Economics Assessment takes advantage of that opportunity by placing most of the assessment items in specific relevant and useful contexts and applications. Between 20 and 30 percent of the items will be written in each of three contexts – an individual and household context, including decisions about earning, saving, and personal finance challenges; a business context with a focus on entrepreneurs, workers, producers, and investors; and a public context, including items related to government, policy, citizenship, and domestic and international organizations.

The NAEP Economics Assessment will include items that require students to use different cognitive skills to demonstrate their understanding of, and ability to use, economics. Students will be expected to demonstrate Knowing skills that use recognition and recall of fundamental ideas, Applying skills that use principles and concepts to solve real problems, and Reasoning skills that require a broad range of critical-thinking abilities. Approximately one-third of the assessment in each content area will be devoted to each cognitive category.

The framework includes recommendations for the types of items to be used in the NAEP Economics Assessment. Students will spend approximately 60 percent of their time on multiple-choice items, 30 percent on short constructed-response items, and 10 percent on extended constructed-response items. All three types of items will be included in each of the three content areas.

The framework uses the NAEP achievement-level criteria of Basic, Proficient, and Advanced to describe what students should know and be able to do. Basic achievement is partial mastery of prerequisite knowledge and skills. The Proficient level represents solid academic performance. The Advanced level signifies superior performance.

The *Assessment and Item Specifications: NAEP 2006 Economics* is a companion document to the *Assessment Framework: 2006 National Assessment of Educational Progress in Economics*. The specifications document translates the framework into guidelines for developing items and for developing the assessment as a whole. The primary purpose of the specifications document is to provide the National Center for Education Statistics (NCES) and its assessment development contractor with information that will ensure that the NAEP Economics Assessment reflects the intent of the NAEP Economics Framework adopted by the National Assessment Governing Board.

Chapter 1: Introduction

What is the National Assessment of Educational Progress (NAEP)?

Often called the "Nation's Report Card," the National Assessment of Educational Progress (NAEP) is the only nationally representative, continuing assessment of what America's students know and can do in various subject areas. NAEP provides a comprehensive measure of students' learning at critical junctures in their school experience. As mandated by Congress in Public Law 107-110, the purpose of NAEP is to provide, in a timely manner, a fair and accurate measurement of student academic achievement and to report trends in such achievement. NAEP accomplishes these tasks by regularly assessing what students know and can do in various subject areas in grades 4, 8, and 12.

Who is responsible for NAEP?

NAEP has three components: policy, operations, and implementation. The National Assessment Governing Board (NAGB), whose members are appointed by the Secretary of Education, sets policy for NAEP. NAGB selects the subject areas to be assessed, develops assessment objectives and specifications, develops guidelines for reporting, and undertakes other policy duties. The National Center for Education Statistics (NCES), in turn, is responsible for overseeing NAEP operations. Implementation of the NAEP program is carried out through contracts, grants, and cooperative agreements with qualified organizations. These organizations are responsible for developing the assessment instruments, selecting the school and student samples, scoring student responses, analyzing the data, writing NAEP reports, and performing other NAEP tasks.

What kind of information does NAEP collect?

NAEP collects basically two types of information: from the assessment, student performance data on cognitive items in a subject area and from questionnaires, background data. The assessment instrument includes a variety of tasks, from multiple-choice items to extended constructed-response items. The variety in these assessment instruments provides students with multiple ways to demonstrate their understanding of the content being assessed.

NAEP collects background data through questionnaires completed by the students, their teachers, and the school principal or his or her designee. Some of these questions are standard for every NAEP assessment, regardless of subject, and concentrate on student demographics such as gender, race/ethnicity, and region. Other background information is collected on factors that influence academic performance, such as time spent by students on homework and teachers' instructional practices. In addition, specific questions may directly relate to the subject being assessed. For example, in economics, students might be queried about whether they have had a course in economics at any point in their high school careers.

How does NAEP collect this information?

NAEP relies on two forms of sampling: student sampling and item sampling. Through a rigorous sampling process, NAEP samples students nationwide to participate in the assessment at each grade level—4, 8, and 12. The sample is large enough to produce reliable and valid results at the national level and for subgroups of students defined by specified characteristics (e.g., gender, race/ethnicity, eligibility for the federal Free/Reduced-Price Lunch Program, and region). In subjects whose results are reported at the state level (reading, mathematics, writing, and science), samples of students are selected from each participating state so that NAEP can produce reliable and valid results at the state level. In item sampling, each student generally answers two blocks (or sets) of items in 50 minutes. NAEP can use a large number of items in an assessment for a given subject area and grade level because of this sampling design.

How are NAEP achievement results reported?

NAEP provides information to the public primarily through "The Nation's Report Card." By law, no school or student performance results are reported for NAEP. In fact, the NAEP design precludes the reporting of such data. All results are reported for representative samples of students.

Subject-matter achievement is reported by scale scores and by achievement levels. NAEP scale scores provide information about the distribution of student achievement. Scale scores usually range from 0 to 500 and are reported as averages and percentiles. However, the primary means of reporting NAEP results are achievement levels, which are standards for *Basic, Proficient*, and *Advanced* performance. These levels describe what students should know and be able to do for each grade and subject that NAEP assesses.

These scale scores and achievement levels are developed independently for each subject; thus, the results cannot be compared across subjects. NAEP also reports scale scores and achievement levels for subgroups of students, as well as by background factors that relate to student achievement.

NAGB defines the achievement levels as follows:

Basic: Students at this level demonstrate partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade.

Proficient: Students at this level demonstrate solid academic performance for each grade assessed. These students demonstrate competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.

Advanced: Students at this level demonstrate superior performance.

What is the 2006 NAEP Economics Assessment?

In December 2001, Congress passed the No Child Left Behind Act. President Bush signed the bill into law in January 2002. This Act requires that NAEP "to the extent time and resources allow...conduct additional national assessments...in regularly scheduled intervals in additional subject matter, including writing, science, history, geography, civics, economics, foreign languages, and arts." This Act replaces the Goals 2000 legislation, which actually set in motion the preparation of the 2006 NAEP Economics Assessment.

NAGB had originally targeted the year 2005 for the first NAEP Economics Assessment. Following the passage of the No Child Left Behind Act of 2001, NAGB modified its NAEP assessment schedule to comply with provisions in the law. At its March 2002 meeting, NAGB designated 2006 for the NAEP Economics Assessment. As a result, in the spring of 2006, a national sample of high school seniors from across the country, with various backgrounds and in public and private schools, will, for the first time, be able to demonstrate on a nationally administered assessment what they know about economics.

What is the NAEP Economics Framework Development Project?

In September 2001, NAGB awarded a contract to the American Institutes for Research (AIR) to conduct the Economics project. AIR collaborated with the National Council on Economic Education (NCEE) and the Council of Chief State School Officers (CCSSO) to develop recommendations to NAGB for the 2006 Economics Assessment. Specifically, the Project Management Team directed the work of the Steering Committee, the Planning Committee, and the Technical Advisory Panel to make recommendations to NAGB on the following:

- A framework for the assessment
- Assessment and item specifications based on the framework
- Background variables to be collected from students, teachers, and school administrators

The Steering Committee consisted of 15 members, the Planning Committee had 19 members, and the Technical Advisory Committee had 4 members. The Steering and Planning Committees included secondary teachers and administrators, college and university teachers, representatives of professional education organizations and the private sector, policymakers, and members of the public. The Steering Committee met three times to set the overall guidelines for the project and to act in an advisory capacity, review materials, and recommend revisions and changes. The Planning Committee met five times and designed the framework, the specifications, and the background variables document with the assistance of the Technical Advisory Committee and the Project Management Team.

In addition to the members of the committees and the Project Management Team, hundreds of stakeholders—educators, business and labor representatives, students, and policymakers—were involved in the evolution of the Framework Development Project through their participation in the national review forums and other reviews of the documents. Members of each project committee and the Project Management Team are listed in Appendices B-E.

The timeline for the project follows:

Fall 2001 NAGB awarded the Economics Contract and delivered its charge to the project Steering Committee.
Project consultants developed an Issues Paper to guide committee discussions.

Fall 2001 through Winter 2002
The Steering Committee and the Planning Committee met several times. The Steering Committee developed the "Charge" to guide the work of the Planning Committee. The Planning Committee developed the framework and specifications for the assessment.

April and May 2002
The framework was made available for National Review.

Summer 2002 Full recommendations for the assessment framework, specifications, and background questions were prepared and submitted to NAGB.

August 2002 NAGB took final action on recommendations regarding the 2006 NAEP Economics Assessment – on the Framework, Specifications, and Background Variables.

Chapter 2. Economic Education

Economic literacy is essential for individuals to function effectively in their own personal lives, as participants in an increasingly connected world economy, and as citizens. It is difficult to function as a productive member of society—as a worker, a saver, an investor, a consumer, or an active citizen—without some knowledge of economic concepts and ideas and an ability to apply basic economic analysis to solve everyday problems.

The core of economics taught in elementary, secondary, and college classrooms is designed to enable students to understand how economies function and to apply economic analysis in their own lives—helping them interpret the daily news; make personal decisions about spending, working, saving, and investing; and explore social and economic challenges and policies. Economic understanding is, more than anything else, the ability to use a set of principles to understand better how the world around us works.

Instruction in economics in high school is important for high school graduates who go on to college; it is especially important for those high school graduates who do not attend college. Among the 63 percent of high school graduates who go to college, only 40 percent take a college economics course (Walstad, 2001). This percentage means that 75 percent of all high school graduates will not take an economics course unless they do so in high school.

What is the current state of economic education in the United States?

Economics as a part of the elementary, middle, and secondary school curricula has expanded at a steady pace throughout the last 40 years. Part of the impetus has been the increasing awareness of the importance of economic understanding by teachers and curriculum planners and the creation and expansion of university teacher training programs for in-service teachers. A movement to mandate secondary economics courses for graduation spread rapidly during the 1970s and 1980s. The efforts of national education organizations and economic institutions such as the National Council on Economic Education, the Federal Reserve Banks, Junior Achievement, and the Foundation for Teaching Economics resulted in a further expansion of economics in the curriculum, the development of new materials, and teacher training.

In today's elementary and secondary classrooms, economics concepts are being integrated into traditional mathematics, reading, and social studies lessons. In some secondary schools, not only are these concepts integrated across the curriculum, but students are given the opportunity, and sometimes are required, to take a one-semester course in economics. In 1998, the National Center for Education Statistics found that slightly more than 1.3 million high school seniors, or 46 percent of the total number of students, had actually taken a course labeled "economics" (National Center for Education Statistics, 2001). Other estimates of the number of students taking economics are lower. For example, Walstad (2001) estimated that only 41 to 43 percent of high school seniors have taken an economics course.

Forty-eight states and the District of Columbia include economics as part of state standards or curriculum guidelines (Dempsey, 2000). That is a significant increase even over survey

results from two years earlier. However, only 36 states require the implementation of economic standards (up from 28 states in 1998). A total of 22 states test students on economic knowledge; 9 other states are currently developing tests. Thirteen states, including 5 with very large student populations—California, Florida, Georgia, New York, and Texas—require economics prior to graduation. Four others require students to take a course with economics included in the course content. An additional 10 percent of high school students take courses such as American Government and Economics that may include substantial economics content (National Center for Education Statistics, 2001).

The high school curriculum is crowded. Even in the states that require an economics course for graduation, the time devoted to economics is limited, and approximately half of those states' assessments do not include economics (Dempsey, 2000). Students do have opportunities to learn economic concepts and study institutions in U.S. and world history, civics and government, social studies, literature, mathematics, and even science courses. The content standards that have been developed in U.S. and world history, social studies, civics, and geography do include economic concepts, but they are limited in number and scope (Buckles & Watts, 1997).

The desired content and goals of economic education in elementary and middle schools and in secondary economics courses have been explored by teachers, economic educators, and economists. Beginning with the *Framework* report in the 1970s (Hansen, Bach, Calderwood, & Saunders, 1977), the *Framework* revision in the 1980s (Saunders et al., 1984), and the *Scope and Sequence* work in the late 1980s (Gilliard et al., 1988), professionals with a wide variety of backgrounds have come together to reach agreements about reasonable expectations of economic understanding for secondary school graduates.

Economics was included as one of the subjects that Congress in 1994 set out for competency in the "Goals 2000: Educate America Act."

> *By the year 2000, all students will leave grades 4, 8, and 12 having demonstrated competency over challenging subject matter including English, mathematics, science, foreign languages, civics and government, economics, arts, history, and geography, and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our Nation's modern economy.*

Following that designation, the National Council on Economics Education developed a coalition of organizations and individuals to write voluntary content standards in economics. A writing committee consisting of nationally recognized economic educators and teachers and a review committee of distinguished economists were established and began work. A variety of organizations, teachers, and economists were consulted throughout the process. The result was the *Voluntary National Content Standards in Economics* (National Council on Economic Education, 1997).

Additional efforts have gone into the creation of research and evaluation instruments in economic education for elementary, middle, and secondary schools (Walstad, 2001). The Advanced Placement Economics examinations have been created for the Advanced Placement

economics courses taught in secondary schools. Professional groups also have developed guides for secondary-school economics content. Textbooks with economics content that is based on standard practice in a large number of states have been published and are widely used. In each instance, goals for economic understanding have been established. The results of all these previous efforts provide useful guidelines for understanding what is important in the elementary and secondary economics experience.

There is significant variation even among what are described as economics courses in the nation's high schools (Dempsey, 2000). The high school economics experience ranges from Advanced Placement Economics, which is equivalent to a college-level principles of economics course, to courses in consumer economics, personal finance, business principles, or, in some cases, studies of comparative economic systems. Some of these courses include very little economics.

The challenge of defining the depth and breadth of content in the NAEP Economics Assessment is further complicated because many students' exposure to economics is limited to the instruction they receive as part of a class other than economics or what they learn from their parents, the media, or their own employment.

Describing the typical economics curriculum that a student has encountered is not possible. Some students have never had a course and may not even recognize that economics concepts and ideas have been infused into their other courses. Others may overestimate their degree of economic understanding gained from those courses. A significant number have had a one-semester course in economics, and a small number of students have had a yearlong course. So how can a fair and rigorous NAEP assessment be created that measures what students do know in economics and what they should know in grade 12? This was the question faced by a broad-based group of economics educators, policymakers, and representatives of business and finance assembled as the first Steering Committee for the NAEP Economics Assessment.

Chapter 3: Content

The Steering Committee began its work by developing a Charge that defined the scope of the assessment and provided guidelines for the content to be assessed, that is, what grade 12 students should know and be able to do. A copy of that Charge can be found in Appendix F. The Planning Committee, composed of knowledgeable and experienced economics educators, began its work with the Charge given by the Steering Committee. On the basis of ensuing discussions, the Planning Committee developed the following definition of economic literacy to guide the specification of the appropriate content and skills:

> *Economic literacy is the ability to identify, analyze, and evaluate the consequences of individual decisions and public policy. Economic literacy includes an understanding of*
>
> - *the fundamental constraints imposed by limited resources, the resulting choices people have to make, and the trade-offs they face;*
> - *how economies and markets work and how people function within them; and*
> - *the benefits and costs of economic interaction and interdependence among people and nations.*
>
> *Economic literacy also includes having the skills that allow people to function effectively in their roles as consumers, producers, savers, investors, and responsible citizens. These skills include economic reasoning, problem solving, decision making, and the ability to analyze real-life situations.*

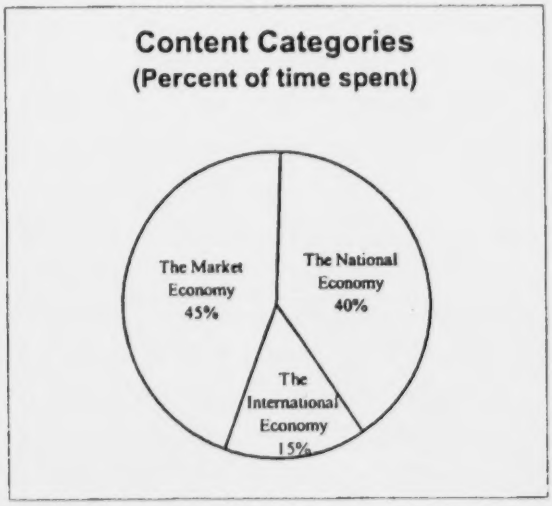
Following the request in the Steering Committee Charge, the Planning Committee used the Voluntary National Content Standards in Economics as a basis on which to build. The Planning Committee selected "benchmarks" under each of the proposed 20 standards and added a benchmark on the time value of money.

The standards include the principles of economics agreed on and viewed as essential by most economists, followed by the benchmarks that give more detail about what grade 12 students should know and be able to do with regard to each standard. Students have to understand basic economic principles before they can reason logically about the economic issues that affect their lives and evaluate disagreements over such matters as the proper role of the government in the economy.

The writers of the Voluntary National Content Standards noted, "Almost all economic principles are conditioned on assumptions." To include all the assumptions with each standard and benchmark would detract from the effectiveness and importance of the standards and benchmarks themselves. So, in some cases, without specifying all the required assumptions, the standards and benchmarks imply as always true some principles that are widely agreed to be true in most, but not necessarily all, circumstances (National Council on Economic Education, 1997). In other cases, the standards explain the implications of different assumptions.

The economics content is necessary for the understanding and the analysis of a wide variety of applications, including those involving individual and household choices, personal finance issues, business and entrepreneurial decisions, and public policy. For that reason, the project committees recommend that the understanding of and the ability to use most of the economic concepts be assessed within the contexts of specific applications. The three contextual areas specified by the committee are an individual and household context, a business context, and a government or public context.

For reporting purposes, the project committees allocated the content among three content areas. Approximately 45 percent of the assessment will cover content and skills included in the Market Economy; 40 percent in the National Economy; and 15 percent in the International Economy. The recommended percentages refer to the amount of time that students will spend answering items in each content area. The project committees recommend that the assessment results be reported as a total score and as scores for each content area.



A summary of the standards included in each category is shown in Table 1. The numbers in parentheses after the standards match the numbering system used in the Voluntary National Content Standards. Four standards (markets; investment, productivity, and growth; the economic role for government; and government decision making) are listed in more than one content area.

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Table 1. Distribution of Standards Across Content Areas

The Market Economy	The National Economy	The International Economy
Choices and costs (1)	Resource allocation (3)	Voluntary exchange (5)
Effective decision making (2)	Money (11)	Benefits of trade (6)
Incentives (4)	Interest rates (12)	Markets (7)
Markets (7)	Investment, productivity, and growth (15)	Investment, productivity, and growth (15)
Prices (8)	Economic role for government (16)	Government decision making (17)
Competition (9)	Government decision making (17)	
Institutions (10)	Gross domestic product (18)	
Income (13)	Unemployment and inflation (19)	
Entrepreneurs (14)	Fiscal and monetary policies (20)	
Investment, productivity, and growth (15)		
Economic role for government (16)		
Government decision making (17)		

A brief introduction to each of the three content areas presents an overview of the concepts in the Market Economy, the National Economy, and the International Economy. The standards and benchmarks that follow each content area provide a detailed outline of the specific economic topics that NAEP will assess at the level of grade 12.

The Market Economy

The core content in this category includes the relevance of limited resources, how individuals and institutions make and evaluate decisions, the role of incentives, how buyers and sellers interact to create markets, how markets allocate resources, and the economic role of government in a market economy.

Economically literate grade 12 students are able to identify what trade-offs they face—what they gain and what they give up when they consider alternatives and make choices. Doing so informs their decisions, helping them choose alternatives that promote their goals as consumers, producers, savers, investors, and citizens. They can identify incentives that affect people's behavior and explain how incentives affect their own behavior.

They are able to describe how the interaction of buyers and sellers in markets influences prices and output levels. They are able to predict how prices change when there is either a shortage or a surplus of the product. They can explain how changes in the supply and demand conditions and in the level of competition in different markets can affect prices and output levels.

Students who understand and are able to use economics can describe the likely effects of plans for education, training, and career options on future earnings and can identify the risks, returns,

and other characteristics of entrepreneurship that bear on its attractiveness as a career. They can predict the consequences, the risks, and the potential returns of investment decisions made by individuals, businesses, and governments.

Students are able to describe the roles of economic institutions, such as legal systems, private property, labor unions, and corporations. They can identify and evaluate the benefits and the costs of alternative public policies and assess who enjoys the benefits and who bears the costs and explain why government policies exist.

Content in the Market Economy includes much of what is traditionally described as microeconomics.

Standard 1 Choices and costs

Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.

1.1.1 The opportunity cost of a choice is the value of the best alternative given up.

1.1.2 Scarcity is the condition of not being able to have all the goods and services one wants. It exists because human wants for goods and services exceed the quantity of goods and services that can be produced from all available resources.

1.1.3 Choices involve trading off the expected value of one opportunity against the expected value of its best alternative.

1.1.4 Choices made by individuals, firms, or government officials often have long-run unintended consequences that can partially or entirely offset the initial effects of their decisions.

1.1.5 Productive resources are the natural resources, human resources, and capital goods available to make goods and services.

Standard 2 Effective decision making

Effective decision making requires comparing the additional costs of alternatives with the additional benefits. Most choices involve doing a little more or a little less of something: few choices are "all or nothing" decisions.

1.2.1 Marginal benefit is the change in total benefit resulting from an action. Marginal cost is the change in total cost resulting from an action.

1.2.2 As long as the marginal benefit of an activity exceeds the marginal cost, people are better off doing more of it; when the marginal cost exceeds the marginal benefit, they are better off doing less of it.

1.2.3 To determine the best level of consumption of a product, people must compare the additional benefits with the additional costs of consuming a little more or a little less.

1.2.4 To produce the profit-maximizing level of output and hire the optimal number of workers and other resources, producers must compare the marginal benefits and marginal costs of producing a little more with the marginal benefits and marginal costs of producing a little less.

1.2.5 To determine the optimal level of a public policy program, voters and government officials must compare the marginal benefit and marginal cost of providing a little more or a little less of the program's services.

1.2.6 The time value of money refers to the relationship between the length of time money is invested and its growth due to the compounding of gains.

Standard 4 Incentives

People respond to positive and negative incentives.

1.4.1 Changes in incentives cause people to change their behavior in predictable ways.

1.4.2 Acting as consumers, producers, workers, savers, investors, and citizens, people respond to incentives in order to allocate their scarce resources in ways that provide the highest possible returns to them.

Standard 7 Markets

Markets exist when buyers and sellers interact. This interaction determines market prices and thereby allocates scarce goods and services.

1.7.1 A market exists whenever buyers and sellers exchange goods and services.

1.7.2 Market prices are determined through the buying and selling decisions made by buyers and sellers.

1.7.3 The equilibrium price of a good or a service is the one price at which quantity supplied equals quantity demanded.

1.7.4 If a price is above the equilibrium price, it will fall, causing sellers to produce less and buyers to purchase more; if it is below the equilibrium price, the price will rise, causing sellers to produce more and buyers to purchase less.

1.7.5 Shortages of a product usually result in price increases in a market economy; surpluses usually result in price decreases.

Standard 8 Prices

Prices send signals and provide incentives to buyers and sellers. When supply or demand changes, market prices adjust, affecting incentives.

1.8.1 An increase in the price of a good or a service encourages people to look for substitutes, causing the quantity demanded to decrease, and vice versa. This relationship between price and quantity demanded, known as the law of demand, exists as long as other factors influencing demand do not change.

1.8.2 An increase in the price of a good or a service enables producers to cover higher per-unit costs, causing the quantity supplied to increase, and vice versa. This relationship between price and quantity supplied is normally true as long as other factors influencing the costs of production and supply do not change.

1.8.3 Demand for a product changes when there is a change in consumers' incomes or preferences, in the prices of related goods or services, or in the number of consumers in a market.

1.8.4 Supply of a product changes when there are changes in the prices of the productive resources used to make the good or the service, the technology used to make the good or the service, the profit opportunities available to producers by selling other goods or services, or the number of sellers in a market.

1.8.5 Elasticity describes the degree to which buyers and sellers respond to price changes.

1.8.6 Changes in supply or demand cause relative prices to change; in turn, buyers and sellers adjust their purchase and sales decisions.

1.8.7 Government-enforced price ceilings set below the equilibrium price and government-enforced price floors set above the equilibrium price distort price signals and incentives to producers and consumers. The price ceilings cause persistent shortages, whereas the price floors cause persistent surpluses.

Standard 9 Competition

Competition among sellers lowers costs and prices and encourages producers to produce more of what consumers are willing and able to buy. Competition among buyers increases prices and allocates goods and services to those people who are willing and able to pay the most for them.

1.9.1 The level of competition in an industry is affected by the ease with which new producers can enter the industry and by consumers' information about the availability, price, and quantity of substitute goods and services.

1.9.2 The pursuit of self-interest in competitive markets generally leads to choices and behavior that also promote the national level of economic well-being.

1.9.3 When competition is limited, producers are able to gain more control of the market and the prices they set.

1.9.4 The introduction of new products and production methods by entrepreneurs is an important form of competition and is a source of technological progress and economic growth.

Standard 10 Institutions

Institutions evolve in market economies to help individuals and groups accomplish their goals. Banks, labor unions, corporations, legal systems, and not-for-profit organizations are examples of important institutions. Another institution, clearly defined and well-enforced property rights, is essential to a market economy.

1.10.1 Through the process of collective bargaining with employers, labor unions represent some workers in negotiations involving wages, fringe benefits, and work rules.

1.10.2 Incorporation allows firms to accumulate sufficient financial capital to make large-scale investments and achieve economies of scale. Incorporation also reduces the risk to investors by limiting stockholders' liability to their share of ownership of the corporation.

1.10.3 Banks and other financial institutions channel funds from savers to borrowers and investors.

1.10.4 Property rights, contract enforcement, standards for weights and measures, and liability rules affect incentives for people to produce and exchange goods and services.

Standard 13 Income

Income for most people is determined by the market value of the productive resources they sell. What workers earn depends, primarily, on the market value of what they produce and how much they add to the production of it.

1.13.1 Employers are willing to pay wages and salaries to workers because they expect to sell the goods and services those workers produce at prices high enough to cover the wages and salaries and all the other costs of production.

1.13.2 More productive workers are likely to be of greater value to employers and earn higher wages than less productive workers.

1.13.3 People's incomes, in part, reflect choices they have made about education, training, skill development, and careers. People with few marketable skills are more likely to be poor.

1.13.4 Changes in the prices for productive resources affect the incomes of the owners of those productive resources and the combination of those resources used by firms.

1.13.5 Changes in demand for specific goods and services often affect the incomes of the workers who make those goods and services.

Standard 14 Entrepreneurs

Entrepreneurs are people who take calculated risks in organizing productive resources to make goods and services. Profit is an important incentive that leads entrepreneurs to accept the risks of business failure.

1.14.1 Entrepreneurs are individuals who take calculated risks in order to start new businesses and develop innovative products and processes.

1.14.2 Entrepreneurs accept the risk of organizing resources to produce goods and services, and they hope to earn profits.

1.14.3 Entrepreneurs and other sellers earn profits when buyers purchase the products they sell at prices high enough to cover the costs of production; they incur losses when buyers do not purchase the products they sell at prices high enough to cover the costs of production.

Standard 15 Investment, productivity, and growth

Investment in factories, machinery, and new technology and in the health, education, and training of people can raise future standards of living.

1.15.1 Investments in physical and human capital can increase productivity, but such investments entail opportunity costs and economics risks. Investing in new physical or human capital involves a trade-off of lower current consumption in anticipation of greater future production and consumption.

1.15.2 Workers can improve their productivity by improving their human capital and by using physical capital such as tools and machinery.

Standard 16 Economic role for government

Government has an economic role in a market economy whenever the benefits of a government policy outweigh its costs. Governments often provide national defense, address environmental concerns, define and protect property rights, and through regulation attempt to make markets more competitive. Most government policies also redistribute income.

1.16.1 Markets do not allocate resources effectively if (1) property rights are not clearly defined or enforced, (2) externalities (spillover effects) affecting large numbers of people are associated with the production or consumption of a product, or (3) markets are not competitive.

1.16.2 An important role for government in the economy is to define, establish, and enforce property rights. A property right to a good or a service includes the right to exclude others from using the good or the service and the right to transfer the ownership or the use of the resource to others.

1.16.3 When a price fails to reflect all the benefits of a product, too little of the product is produced and consumed. When a price fails to reflect all the costs of a product, too much of it is produced and consumed. Government can use subsidies to help correct for insufficient output; it can use taxes to help correct for excessive output; or it can regulate output directly to help correct for over- or underproduction or for over- or underconsumption of a product.

1.16.4 Externalities exist when some of the costs and the benefits associated with production and consumption fall on someone other than the producers or the consumers of the product.

1.16.5 Governments provide an alternative method to markets for supplying goods and services when markets fail and when it appears that the benefits to society of doing so outweigh the costs to society.

Standard 17 Government decision making

The costs of government policies sometimes exceed the benefits. This may occur because social goals other than economic efficiency are being pursued; because of incentives facing voters, government officials, and government employees; or because of actions pursued through government and legal channels by special-interest groups that can impose costs on the general public.

1.17.1 Price controls are often advocated by special-interest groups. Price controls reduce the quantity of goods and services consumed or produced, thus depriving consumers of some goods and services whose value would exceed their cost.

The National Economy

The National Economy content area includes the concepts, terminology, and data used to identify and describe inflation, unemployment, output, and growth; the factors that cause changes in those conditions; the role of money and interest rates in an economy; and the mechanics and the appropriate uses of Federal Reserve monetary policies and federal government fiscal policies.

Economically literate grade 12 students are able to describe how economies use different systems of allocating goods and services and can compare the benefits and the costs of different methods. Students can identify the various economic roles that governments play as providers of goods and services.

Students can explain the role of money in an economy and identify interest rates as the prices of borrowing or lending money. They can give examples of situations in which they might pay or receive interest and how they would react to changes in interest rates.

Students can identify the effects of technological change and investment on gross domestic product. They are able to explain the function of taxes and how taxes may redistribute income. They can interpret media reports about current economic conditions and explain how these conditions can influence decisions made by consumers, producers, and governments.

Students are able to make informed decisions by anticipating the consequences of inflation and unemployment. They can explain the macroeconomic policies of the federal government and the Federal Reserve System, under what conditions the policy decisions are likely to change, and the effects of those changes on themselves and others.

Content in the National Economy includes much of what is traditionally described as macroeconomics.

Standard 3 Resource allocation methods

Different methods can be used to allocate goods and services. People acting individually or collectively through government must choose which methods to use to allocate different kinds of goods and services.

2.3.1 People in all economies must answer three basic questions: What goods and services will be produced? How will these goods and services be produced? Who will consume them?

2.3.2 National economies vary in the extent to which they rely on government directives (central planning) and signals from private markets to allocate scarce goods, services, and productive resources.

2.3.3 A comparison of the benefits and the costs of different allocation methods in order to choose the method that is most appropriate for a specific problem can result in more effective allocations and a more effective overall allocation system.

Standard 11 Money

Money makes it easier to trade, borrow, save, invest, and compare the value of goods and services.

2.11.1 Money is anything widely accepted as final payment for goods and services.

2.11.2 The basic money supply in the United States consists of currency, coins, and checking account deposits.

2.11.3 In many economies, when banks make loans, the money supply increases; when loans are paid off, the money supply decreases.

Standard 12 Interest rates

Interest rates, adjusted for inflation, rise and fall to balance the amount saved with the amount borrowed, thus affecting the allocation of scarce resources between present and future uses.

2.12.1 An interest rate is a price of money that is borrowed or saved.

2.12.2 Like other prices, interest rates are determined by the forces of supply and demand.

2.12.3 The real interest rate is the nominal or current market interest rate minus the expected rate of inflation.

2.12.4 Higher real interest rates provide incentives for people to save more and to borrow less. Lower real interest rates provide incentives for people to save less and to borrow more.

2.12.5 Real interest rates usually are positive because people must be compensated for deferring the use of resources from the present into the future.

2.12.6 Riskier loans command higher interest rates than do safer loans because of the greater chance of default on the repayment of risky loans.

Standard 15 Investment, productivity, and growth

Investment in factories, machinery, and new technology and in the health, education, and training of people can raise future standards of living.

2.15.1 Productivity is measured by dividing output (goods and services) by the number of inputs used to produce the output. A change in productivity is a change in output relative to input.

2.15.2 The rate of productivity increase in an economy is strongly affected by the incentives that reward successful innovation and investments in research and development and in physical and human capital.

2.15.3 Increases in productivity result from advances in technology and increases in physical and human capital.

2.15.4 Economic growth is a sustained rise in a nation's production of goods and services. It results from investments in human and physical capital, research and development, technological change, and improved institutional arrangements and incentives.

2.15.5 Economic growth creates new employment and profit opportunities in some industries, but growth reduces opportunity in others.

Standard 16 Economic role for government

Government has an economic role in a market economy whenever the benefits of a government policy outweigh its costs. Governments often provide national defense, address environmental concerns, define and protect property rights, and through regulation attempt to make markets more competitive. Most government policies also redistribute income.

2.16.1 Governments pay for the goods and services they use or provide by taxing or borrowing from people.

2.16.2 Governments often redistribute income directly in response to individuals or interest groups who are not satisfied with the income distribution resulting from markets; governments also redistribute income indirectly as side effects of other government actions that affect prices or output levels for various goods and services.

2.16.3 Most federal tax revenue comes from personal income and payroll taxes. Payments to social security recipients, the costs of national defense, medical expenditures, and

interest payments on the national debt constitute the bulk of federal government spending.

2.16.4 Different tax structures affect consumers and producers differently.

Standard 17 Government decision making

The costs of government policies may exceed the benefits. This may occur because social goals other than economic efficiency are being pursued; because of incentives facing voters, government officials, and government employees; or because of actions pursued through government and legal channels by special-interest groups that can impose costs on the general public.

2.17.1 Incentives exist for political leaders to favor programs that entail immediate benefits and future costs; few incentives favor programs promising immediate costs and future benefits, even though the latter programs are sometimes economically more effective than the former programs.

Standard 18 Gross Domestic Product (GDP)

A nation's overall levels of income, employment, and prices are determined by the interaction of spending and production decisions made by all households, firms, government agencies, and others in the economy.

2.18.1 One person's spending is other people's income. When consumers make purchases, goods and services are transferred from businesses to households in exchange for money payments. That money is used in turn by businesses to pay for natural resources, human resources, and capital goods and to pay taxes.

2.18.2 Gross Domestic Product (GDP) is a basic measure of a nation's economic output and income. It is the total market value, measured in dollars, of all final goods and services produced in the economy in one year.

2.18.3 Nominal GDP is measured in current dollars; thus, an increase in GDP may reflect not only increases in the production of goods and services, but also increases in prices. GDP adjusted for price changes is called real GDP. Real GDP per capita is a measure that permits comparisons of material living standards over time and among people in different nations.

2.18.4 The potential level of real GDP for a nation is determined by the quantity and quality of its natural resources, the size and skills of its labor force, and the size and quality of its stock of capital resources.

2.18.5 When desired expenditures for consumption, investment, government spending, and net exports are greater than the value of a nation's output of final goods and services, GDP rises and inflation occurs and/or employment rises. When desired expenditures for consumption, investment, government spending, and net exports

are less than the value of a nation's output of final goods and services, GDP decreases and inflation and/or employment decreases.

Standard 19 Unemployment and inflation

Unemployment imposes costs on individuals and on nations. Unexpected inflation imposes costs on many people and benefits some others because it arbitrarily redistributes purchasing power. Inflation can reduce the rate of growth of national living standards because individuals and organizations use resources to protect themselves against the uncertainty of future prices.

2.19.1 The unemployment rate is the percentage of the labor force that is willing and able to work, does not currently have a job, and is actively looking for work.

2.19.2 Unemployment rates differ for people of different ages, races, and gender. This reflects differences in work experience, education, training, and skills, as well as discrimination.

2.19.3 Unemployment can be caused by people changing jobs, by seasonal fluctuations in demand, by changes in the skills needed by employers, or by cyclical fluctuations in the level of national spending.

2.19.4 Unemployment has costs for society as well as for individuals. When unemployment is substantial, the economy will not produce as much as it could.

2.19.5 Inflation is an increase in the general level of prices. It reduces the value of money.

2.19.6 When people's incomes increase more slowly than the inflation rate, their purchasing power declines.

2.19.7 The consumer price index (CPI) is the most commonly used measure of price-level changes. It can be used to compare the price level in one year with price levels in earlier or later periods.

2.19.8 The costs of inflation are different for different groups of people. Unexpected inflation hurts savers and people on fixed incomes; it helps people who have borrowed money at fixed rates of interest.

Standard 20 Fiscal and monetary policies

Federal government budgetary policy and the Federal Reserve System's monetary policy influence the overall levels of employment, output, and prices.

2.20.1 Fiscal policies are decisions to change spending and tax levels by the federal government. These decisions are adopted to influence national levels of output, employment, and prices.

2.20.2 In the short run, increasing federal spending and/or reducing taxes can promote more employment and output, but these policies also put upward pressure on the

price level and interest rates. Decreased federal spending and/or increased taxes tend to lower price levels and interest rates, but they reduce employment and output levels in the short run.

2.20.3 In the long run, the interest-rate effects of fiscal policies lead to changes in private investment spending by businesses and individuals that partially, if not entirely, offset the output and employment effects of fiscal policy.

2.20.4 The federal government's annual budget is balanced when its revenues from taxes and user fees equal its expenditures. The government runs a budget deficit when its expenditures exceed its revenues. The government runs a surplus when its revenues exceed its expenditures.

2.20.5 When the government runs a budget deficit, it must borrow from individuals, corporations, or financial institutions to finance that deficit.

2.20.6 The national debt is the total amount of money the federal government owes. This is the sum of all its past annual deficits and surpluses. The government pays interest on the money it borrows to finance the national debt.

2.20.7 In the long run, inflation results from increases in a nation's money supply that exceed increases in its output of goods and services.

2.20.8 Monetary policies are decisions by the Federal Reserve System that lead to changes in the supply of money and the availability of credit. Changes in the money supply can influence overall levels of spending, employment, and prices in the economy by inducing changes in interest rates charged for credit and by affecting the levels of personal and business investment spending.

2.20.9 The major monetary policy tool that the Federal Reserve System uses is open market purchases or sales of government securities. Other policy tools used by the Federal Reserve System include increasing or decreasing the discount rate charged on loans it makes to banks (and other depository institutions) and raising or lowering reserve requirements for those same financial institutions.

The International Economy

The content in this category includes the reasons for individuals and businesses to specialize and trade; the rationale for specialization and trade across international borders; and the comparison of the benefits and costs of that specialization and resulting trade for consumers, producers, and governments.

Economically literate grade 12 students are able to explain how voluntary exchange, whether in a domestic or an international market, is undertaken because both parties in the exchange expect to benefit. Students can explain how they benefit themselves and others by developing special

skills and strengths. They are able to negotiate exchanges and identify the gains to themselves and others.

They can compare the benefits and costs of policies that alter trade barriers between nations, such as tariffs and quotas. In addition, they are able to identify who bears those costs and who receives the benefits.

They are able to explain why exchange rates change and can predict the effects of those changes on themselves and others. They can explain how investment, technological change, education, and incentive structures contribute to differences in economic growth and standards of living among countries.

Standard 5 Voluntary exchange

Voluntary exchange occurs only when all participating parties expect to gain. This is true for trade among individuals or organizations within a nation and among individuals or organizations in different nations.

3.5.1 Voluntary exchange of goods and services takes place internationally because people or organizations expect to be better off.

3.5.2 When imports are restricted by public policies, consumers pay higher prices and job opportunities and profits in exporting firms decrease.

Standard 6 Benefits of trade

When individuals, regions, and nations specialize in what they can produce at the lowest cost and then trade with others, both production and consumption increase.

3.6.1 Like trade among individuals within one country, international trade promotes specialization and division of labor and increases the productivity of labor, output, and consumption.

3.6.2 Greater specialization leads to increased interdependence among producers and consumers. As a result of growing international economic interdependence, economic conditions and policies in one nation increasingly affect economic conditions and policies in other nations.

3.6.3 Comparative advantage is the primary motivating factor driving international trade.

3.6.4 Individuals and nations have a comparative advantage in the production of goods or services if they can produce a product at a lower opportunity cost than other individuals or nations.

3.6.5 Comparative advantages change over time due to changes in factors such as abundance of resources, resource prices, and international institutions.

Standard 7 Markets

Markets exist when buyers and sellers interact. This interaction determines market prices and thereby allocates scarce goods and services.

3.7.1 An exchange rate is the price of one nation's currency in terms of another nation's currency. Like other prices, exchange rates are determined by the interactions of supply and demand. Foreign exchange markets allocate international currencies.

3.7.2 When exchange rates fluctuate, the prices of exports and imports change, and some groups gain while others lose in each country.

Standard 15 Investment, productivity, and growth

Investment in factories, machinery, and new technology and in the health, education, and training of people can raise future standards of living.

3.15.1 Economic growth varies across countries because of differences in human and physical capital investments, technologies, and institutional arrangements and incentives.

3.15.2 Economic growth has been the primary vehicle for alleviating poverty and raising standards of living.

Standard 17 Government decision making

The costs of government policies may exceed the benefits. This may occur because social goals other than economic efficiency are being pursued; because of incentives facing voters, government officials, and government employees; or because of actions pursued through government and legal channels by special-interest groups that can impose costs on the general public.

3.17.1 Although barriers to international trade usually impose more costs than benefits, they are often advocated by people and groups who expect to gain substantially from them. Because the costs of these barriers are typically spread over a large number of people, each of whom pays only a little and may not recognize the cost, policies supporting trade barriers are often adopted through the political process.

Chapter 4: Characteristics of the Assessment

The project committees offer the following recommendations to guide the development of the assessment instruments. These recommendations include guidelines for

- cognitive skills to be used in answering items;
- appropriate contexts and applications;
- graphing, table and chart interpretation, and calculation skills to be expected;
- the types of items to be included;
- the use of economic terminology; and
- preliminary descriptions of achievement levels.

Cognitive Categories

The project committees have defined three cognitive categories to use in designing the assessment instrument: Knowing, Applying, and Reasoning. Students will spend approximately one-third of their time on items in each category. In addition, approximately one-third of the time that students spend in each content area—Market, National, and International Economies—will be spent answering items in each cognitive category.

1. **Knowing** (33%) — This category measures students' abilities to identify and recall information and to recognize economic terms and concepts. Items in the Knowing category will ask students to

   - recognize and recall information and concepts, or
   - interpret data and information to identify events or trends.

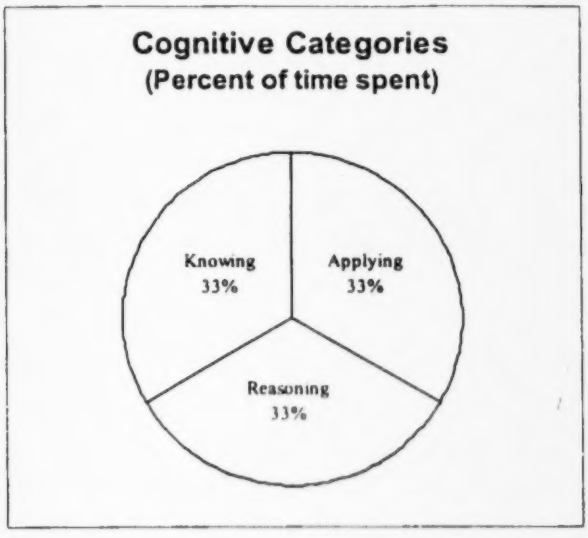
2. **Applying** (33%) — This category measures students' abilities to describe or explain the relationship between information (data, summaries, headlines, problems, and scenarios) and economic concepts. Items in the Applying category will ask students to

   - restate an economic concept in their own words,
   - interpret data and information to identify events or trends and explain cause,
   - analyze a given scenario or event that requires only one step in the analysis, or
   - apply or use a concept when the concept is specified.

3. **Reasoning** (33%) — This category measures students' ability to use information and economic concepts accurately to solve problems, evaluate issues, and interpret situations. Items in the Reasoning category will ask students to

   - interpret data to identify an event or a trend, explain the cause, and recommend policy;
   - apply or use a concept when the concept is not specified;

- apply more than one concept when one or more concepts are specified; or
- analyze a given scenario or event that requires multiple steps in the analysis.



Contexts and Applications

Economics has broad applicability and is rich in opportunities to apply and use core principles and understanding. In addition, young people at the secondary level learn economics in a wide variety of settings, in and out of the academic classroom. Recognizing those characteristics, the project committees recommend that the items in the NAEP assessment be set in a number of contexts. This not only recognizes that students learn in a number of different courses but also benefits students whose understanding of economic concepts is derived from experiences other than formal study.

This requirement is intended to

- assess the extent to which students are able to demonstrate their understanding of economics in real-world situations; and
- make the assessment accessible to students whose understanding of economic concepts is derived from experience or familiarity with everyday economic decision making rather than formal study.

Although a small number of items may not be set in a specific context, 60 to 90 percent should be, with 20 to 30 percent of the items set in each of the following three contextual areas:

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- An *individual and household* context, including items related to personal finance, that is, earning, spending, saving, borrowing, and investing
- A *business* context, including items related to entrepreneurs, workers, producers, and investors
- A *public* context, including items related to government, policy, citizenship, and domestic and international organizations

The remainder of the items will be in other contexts, in multiple contexts, or context free.

Context-based and context-free items will be distributed across the three content areas (the Market Economy, the National Economy, and the International Economy) and across the three cognitive levels (Knowing, Applying, and Reasoning). Examples of items and the types of answers expected in each of the different contexts appear below: [1]

Example of a context-free item:

Using demand and supply analysis, explain how the quantity of a product purchased could increase when price increases.

An increase in demand for a product will cause an increase in price and an increase in the amount produced and sold. The law of demand states that if everything else remains the same, the quantity of a product purchased will decrease when price increases. However, both price and quantity can increase if something else has changed and causes demand to increase.

Example of an individual- and household-context item:

Last year Marisol spent $500 per month to rent an apartment near State University. Many more students are looking for apartments this year than looked last year.

What will most likely happen to the rent for a typical apartment near State University? Explain why.

How will Marisol respond? Explain why.

The rent will increase with an increase in demand for apartments. Marisol will have to reduce her consumption of other goods and services, rent a smaller apartment or move into a dorm room, spend more of her savings, and/or take a part-time job.

Example of a business-context item:

The price of cheese that restaurants use to make pizza has doubled during the past year.

[1] The contextual examples could be written as multiple-choice or short constructed-response items.

What will most likely happen to the price of pizzas and the number of pizzas sold? Explain why.

The cost of making pizzas has increased because the price of cheese has doubled. As a result, the supply of pizzas will decrease, the price will increase, and the number of pizzas sold will decrease.

Example of a public-context item:

Some high school graduates choose between going to college or entering the armed forces right after high school. Suppose Congress has recently passed a program that will significantly lower college tuition.

What will most likely happen to the number of high school graduates who go to college? Explain why.

What will most likely happen to the number of high school graduates who enter the armed forces? Explain why.

The program will increase the number of high school graduates who will choose to go to college because of the lower tuition. If more of these graduates go to college, fewer graduates will be available to enter the armed forces right after high school.

Graphing, Table and Chart Interpretation, and Calculation Skills

The project committees devoted considerable time to the issues involved in the appropriate inclusions of graphs, charts, and tables and the expectations regarding calculation and data manipulation skills. Graphs that summarize behavioral relationships between two variables are an essential part of most economics courses; however, in most courses, they are used as tools, and understanding the graphs is not identified as an outcome. Supply and demand graphs are the most common example of these types of two-dimensional graphs that simultaneously show the behavior of two economic variables. Although these tools are important, students who can interpret supply and demand examples and applications without using graphs should be judged successful economics students. Thus, we should not expect students to be able to read and interpret graphs in significant numbers of items. A much more important skill is their ability to interpret supply and demand and market concepts and to identify appropriate opportunities to use and apply the concepts.

The project committees recommend that although graphs, such as those representing demand and supply, can be used in limited numbers of multiple-choice items, students should be able to perform well on the assessment by answering items that do not include graphs. In addition, the committees believe that the scoring of short and extended constructed-response items should permit, but not require, students to use graphs in answering items, as long as they clearly show that they understand the underlying concepts and are able to apply the concepts successfully and accurately. Two-variable graphs that depict relationships such as supply and demand, cost and

investment functions, and aggregate supply and demand should not be used as stimulus materials or in the stems of short and extended constructed-response items.

The interpretation of tables and charts with data and data trends is sufficiently important that their inclusion in some items is appropriate. Some limited interpretation of data in table form may enhance the assessment of more important concepts, such as equilibrium price and quantity in a supply and demand problem. Charts and time-series graphs that summarize levels and trends in data may be useful for assessing how well students understand such concepts as unemployment, inflation, and economic growth. Such tables, charts, and time-series graphs may be used as stimulus material in multiple-choice, short constructed-response, and extended constructed-response items. Again, the focus of the items should be on measuring students' understanding and application of concepts.

Calculation and manipulation of numbers should be held to a minimum. The focus of the assessment should be on understanding economic concepts and their applications. Calculation of multipliers and elasticities should not be expected. If calculation is useful in assessing a concept, the calculation should be simple and straightforward. The goal is not to assess arithmetic or algebraic abilities.

Types of Items

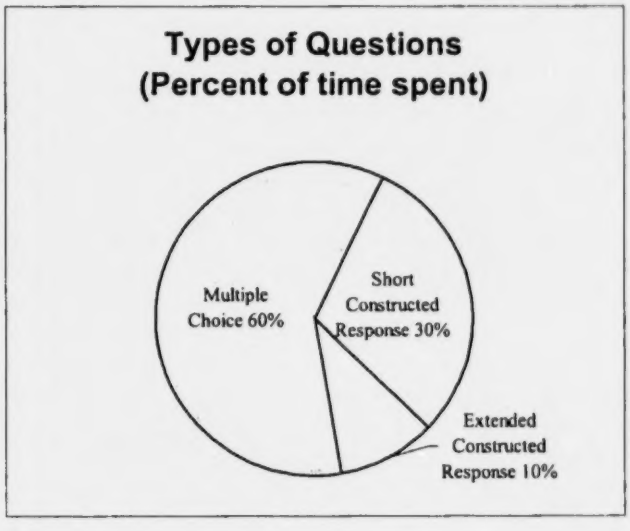
The project committees spent considerable time discussing the different types of items that might be used to measure the economic literacy of grade 12 students. For some standardized tests, research has shown a high level of correlation between the performance of students on multiple-choice items and on constructed-response items, which suggests that the items may be measuring the same content, skills, or both. However, the committee members also noted that constructed-response items allow more opportunity for examining higher-level thinking skills than is possible when only multiple-choice items are used. The members decided, therefore, to include multiple-choice and short and extended constructed-response items on the assessment.

- Multiple-choice items require students to select the correct or best answer to a given item. These items have one correct or best answer and are scored as either correct or incorrect.
- Short constructed-response items require students to respond in short answers that may vary from one or two words or phrases to several sentences. Short constructed-response items are scored according to scoring rubrics with two or three categories.
- Extended constructed-response items require students to consider a situation that demands more than a short response and allows a number of gradations of correctness. Extended constructed-response items may require the application of an economics concept such as supply and demand, a detailed analysis, the synthesis or interpretation of data, and/or the projection of a trend. Extended constructed-response items are scored according to scoring rubrics with five categories.[2]

[2] In some cases, it may be appropriate to have four scoring categories for an extended constructed-response item, depending on the construct assessed and the nature of expected student responses to the item.

Each content area includes knowledge and skills that can be measured with each of the three item formats. Each cognitive category can be measured by any of the item formats. Although a particular cognitive category may seem to lend itself more readily to one item format, each type of item—multiple choice, short constructed response, and extended constructed response—can deal with economics of greater or less depth and sophistication.

To allocate the number of items or the amount of time to the different types of items, the committees weighed costs versus benefits. Because multiple-choice items tend to be less expensive to develop and grade and to be more reliable, the committee decided that this type of item should be used where possible. For items that require deeper understanding or a higher skill level, the committees believed that the benefits of short and extended constructed-response items would outweigh the costs of development and grading. Students will spend approximately 60 percent of their time on multiple-choice items, 30 percent on short constructed-response items, and 10 percent on extended constructed-response items. All three types of items will be included in each of the three content areas.



Economic Terminology

Students learn economics in a number of ways, and many may not know the terms used in standard economics courses and texts but still understand the concept being assessed. The project committees believe that the essential parts of economic literacy are the abilities to use and apply economic concepts and analysis, which do not necessarily include the ability to name the concepts in all cases. The emphasis throughout the assessment should be on assessing how well students understand the meaning of concepts and can use application and reasoning skills, not how well they can define technical and economic-specific language. For these reasons, item writers should be careful about the use of language and need to include items, where possible, that assess understanding without using the specific economic terminology.

To assist item writers in that process, the project committees recommend that certain terms should not be used in the stems or the options of multiple-choice items or in constructed-response items. However, the *concepts* underlying those terms are to be assessed when they are included in the standards and benchmarks. Recognizing that students with formal courses in economics may use economic terminology, the project committees recommend that students who indicate equal understanding on a given constructed-response item receive equal credit, regardless of whether they use these terms or not.

The following terms may not be used in items:

Absolute advantage
Balance of trade
Circular flow
Double coincidence of wants
Expected value
Externalities and spillover effects
Macroeconomics
Marginal analysis
Marginal benefit/cost (Use "additional" or "extra" or "changes in.")
Market-clearing price (Use "equilibrium price.")
Microeconomics
Monopolistic competition
NAIRU (Non-accelerating inflation rate of unemployment)
Natural monopoly
Natural rate of unemployment
Net exports
Nominal
Oligopoly
Potential GDP (Use "real gross domestic product in the long run.")
Price elasticity of demand
Production possibility frontier or curve
Time value of money
Transaction costs

In the same spirit, the project committees recommend that the item writers not test specifically the differences between "quantity demanded" and "demand" and between "quantity supplied" and "supply." The use of the concepts is obviously important in answering a number of items correctly. Although using the term "open market operations" is permissible, the committees prefer that items use "purchase or sales of bonds." "Gross domestic product" is preferred over "GDP."

Preliminary Descriptions of Achievement Levels

The project committees have made recommendations for preliminary descriptions of definitions of the three achievement levels used in NAEP assessments. The committees combined the generic NAEP definitions of each achievement level with the cognitive category definitions and examples from the content outline. The first, second, and third paragraphs of each recommendation suggest examples for the knowing, applying, and reasoning cognitive categories, respectively. The resulting recommendations are stated below:

Basic

Students performing at the Basic level of achievement should be able to identify, recall, and recognize economic concepts such as scarcity, choices, price, supply and demand, competition, inflation, unemployment, imports and exports, and trade.

They should be able to describe and explain the relationship between economic concepts. Examples include relationships between inflation and purchasing power, taxes and government spending, unemployment and consumption, price and quantity in supply and demand, trade and specialization, interest rates and loan payment levels, and human capital investment and income.

Students at the Basic level should be able to use data and information to identify an economic outcome. For example, students should be able to predict the effects of a natural disaster on the quantity or price of a product or the effect of a factory's closing on a local economy. Students should be able to identify the potential for greater return when given the descriptions of two financial assets.

Proficient

Students performing at the Proficient level should be able to identify, recall, and recognize economic concepts and terms such as costs and benefits in decision making, responses to incentives, the mechanics of monetary and fiscal policy, trade barriers, exchange rates, and factors that influence economic growth.

Students should be able to demonstrate their understanding of economic ideas and terms by explaining the relationship between a real-world economic situation and its underlying economic concepts. For example, given a description of two industries, students should be able to explain the relevant characteristics that distinguish them. Students should be able to compare and contrast the effects of monetary and fiscal policy on the price level and output. They also should be able to identify the effects of changes in interest rates on an individual's decisions to finance the purchase of a car or a home.

At the Proficient level, students should be able to use economic data, information, and concepts to solve problems, evaluate issues, and interpret situations. For example, students should be able to explain the appropriate monetary and fiscal policies for a given set of economic data. Or, they should be able to explain the cause and effect of an increase in taxes on the consumption of a specific product. In the international arena,

students should be able to interpret the effect of a new tariff on employment in a domestic industry.

Advanced

Students at the Advanced level should be able to identify, recall, and recognize economic terms such as real interest rate, elasticity, property rights, and comparative advantage and to identify, recall, and recognize concepts such as the present and future values of money, market structure, and real gross domestic product in the long run.

At the Advanced level, students should be able to analyze economic data and information and to apply the economic concepts to real-world situations. For example, by applying tools such as aggregate supply and aggregate demand analysis, students should be able to explain what happens to real gross domestic product during a business cycle. Students should be able to interpret economic trends and to apply data to future personal investment options.

Students at the Advanced level should be able to analyze data, determine trends, and make economic projections. Students should be able to reason economically by using a variety of tools including charts and graphs, computations, and written explanations. For example, students should be able to analyze the rationale for an entrepreneur to start a new business and the subsequent changes in the market, including the number of firms, prices, profit, and output. Students should be able to extend the analysis of monetary and fiscal policy options to include the effects on exchange rates and international trade.

Appendix A

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Appendix F

STEERING COMMITTEE CHARGE TO THE PLANNING COMMITTEE

Through a deliberative process, the Steering Committee tackled the issues described in Chapter 2 and delivered a "Charge" to the Planning Committee, whose task was to take the Charge and develop this framework. The Charge is outlined below.

The Planning Committee used the Charge as a foundation for its work. The outcome as described in this document differs in only one minor aspect. The Charge specified nine reporting themes. Although members of the Planning Committee believe that all nine themes are included in the content framework, nine separate themes for reporting purposes are excessive for an assessment such as NAEP. The reporting themes were reduced in number, but not in scope, to three.

A. Ensure a strong rationale for economics education:
   - *The increasingly complex financial and political environment*
   - *Themes of Chairman Alan Greenspan's speeches*
   - *The role of economics education in accessing opportunities to create wealth*
   - *Information management of financial news (media overload)*
   - *Fully functioning citizens, employees, employers, personal consumers*

B. Focus on the BIG picture:
   - *Do students have a basic understanding of how a commercial society operates?*
   - *Do students understand how they function in it?*
   - *Can they make informed and rational decisions?*
   - *Do they understand the role of incentives?*
   - *Do they understand the institutions that make up the democratic free-market economy?*
   - *Do they understand basic economics concepts?*
   - *Can they use economic tools and data to analyze events and policies?*

C. Use voluntary national standards as a starting point:
   - *Modify them as needed.*
   - *Include "time value of money."*

D. Stress applications:
   - *Use real-life problems.*
   - *Examine the roles of the individual (including personal finance), business (labor, entrepreneurs), and society.*
   - *Use economic analysis and economic method.*

E. Economics items should do the following:
   - *Be inclusive with regard to student subgroups.*
   - *Use a variety of item formats (multiple-choice, graphs/graphing, short answer, extended constructed-response).*

- *Reflect the diversity of learning styles and settings (variety of experiences and stimuli).*
- *Measure various cognitive levels (consider abilities dimensions such as knowledge, application, interpretation, synthesis, and evaluation).*
- *Reflect best practices from teaching and learning.*

F. Background information should include questions about the following:
- *Courses taken (required or elected)*
- *Informal/external learning (parents, own experience, etc.)*
- *Employment (types of)*
- *Computer use*
- *Sources of economic and financial news*

G. Students should understand the following suggested reporting themes:

1) Fundamental concepts:
   - *Scarcity*
   - *Trade-offs*
   - *Opportunity costs*
   - *Comparative advantage*
   - *Incentives*

2) Dynamics of economic growth:
   - *Human capital*
   - *Technological change*
   - *Business investment*

3) How the price system makes a market economy work:
   - *Demand and supply*
   - *Roles of incentives*
   - *Competition*

4) Sources of income and profit:
   - *Incentives, risk-taking, and entrepreneurship*
   - *Production*
   - *Investment in human and business capital*

5) How economic institutions work and interact with the market economy:
   - *Financial institutions and markets*
   - *Labor organizations*
   - *Legal systems, including property rights*

6) Role of money and interest rates in the economy:
   - *Time value of money*
   - *Role of money in exchange*
   - *Business finance*
   - *Personal credit*
   - *Inflation*

7) Business cycles and the role of government policy:
   - *Income*
   - *Unemployment*
   - *Inflation*
   - *Federal Reserve*
   - *Federal budget policy*

8) Role of government in a market economy, including its costs and benefits:
   - *Regulatory*
   - *Environmental*

9) International economics:
   - *Trade*
   - *Capital flows*

Appendix G

SAMPLE ITEMS

The Market Economy

Item Number	Content Area	Benchmark	Cognitive Category	Context	Format	Key
1	Market Economy	1.8.1	Knowing	Business	MC	A

The price of movie tickets has increased. According to the law of demand, what is likely to be the result?

A. Theaters will sell fewer tickets.
B. Theaters' revenues will increase.
C. The quality of movie theaters will improve.
D. The number of videos rented will decrease.

Item Number	Content Area	Benchmark	Cognitive Category	Context	Format	Key
2	Market Economy	1.1.1	Applying	Individual and Household	MC	A

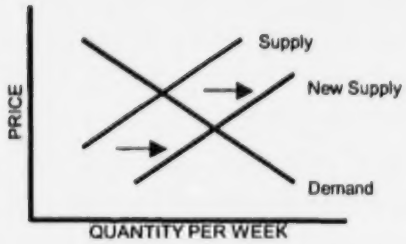
The Bodor family wants to rent a larger apartment and would like to buy new car. They found two apartments that would meet their needs, but one costs more and has several more desirable features. The Bodors' current financial condition would enable them either to rent the more expensive apartment and not buy a new car or to rent the less expensive apartment and buy a new car. The Bodors decided to rent the more expensive apartment. What is the opportunity cost of the decision?

A. Both the new car and the less expensive apartment
B. The new car only
C. The less expensive apartment only
D. The more expensive apartment only

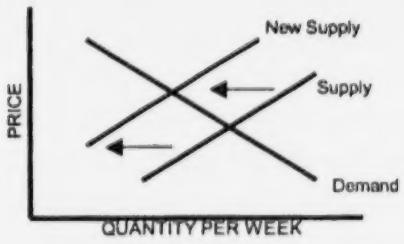
Item Number	Content Area	Benchmark	Cognitive Category	Context	Format	Key
3	Market Economy	1.8.4	Applying	Business	MC	B

Suppose that an industry experiences significant increases in the prices of the inputs used in its manufacturing processes. Which of the following graphs represents the effects in the market for the industry's product?

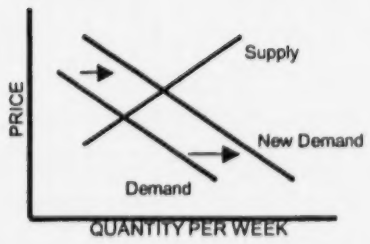
A.



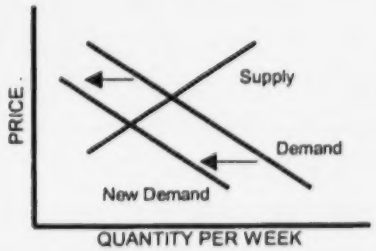
B.



C.



D.



The National Economy

Item Number	Content Area	Benchmark	Cognitive Category	Context	Format	Key
4	National Economy	2.18.2	Knowing	None	MC	A

Which of the following is the best measure of production or output of an economy?

A. Gross Domestic Product
B. Consumer Price Index
C. Unemployment Rate
D. Prime Rate

Item Number	Content Area	Benchmark	Cognitive Category	Context	Format	Key
5	National Economy	2.20.8	Applying	Public	MC	B

What is a major effect of a purchase of bonds by the Federal Reserve?

A. A decrease in margin requirements for stock purchases
B. An increase in the number of commercial bank loans
C. A decrease in the supply of money
D. An increase in interest rates

Item Number	Content Area	Benchmark	Cognitive Category	Context	Format	Key
6	National Economy	2.20.9	Reasoning	Public	ECR	Rubric

ECONOMIC INDICATORS IN THE UNITED STATES

Economic Indicators	Trend or Current Value
Gross Domestic Product	Declines four quarters in a row
Inflation	3%
Unemployment	7%

Use the information shown in the chart above to complete the following tasks.

A. What problem is evident from the information in the chart?
B. Recommend one monetary policy action that would help remedy the problem you identified in A.
C. Explain the process by which your recommended policy will affect gross domestic product.

Scoring Rubric

4 points — Response identifies the problem as a recession, fall in gross domestic product, or high unemployment; proposes that the Federal Reserve purchase bonds, decrease reserve requirements, lower the discount rate, or reduce the target federal funds rate, indicates that the recommended monetary policy will lower interest rates or expand the money supply, and states that the lower interest rates or greater money supply will cause an increase in investment or consumption, or both, and thus increase gross domestic product.

3 points — Response includes the identification of the problem as a recession, a fall in gross domestic product, or high unemployment; a proposal that the Federal Reserve purchase bonds, decrease reserve requirements, lower the discount rate, or reduce the target federal funds rate; and an argument that the recommended monetary policy will lower interest rates or expand the money supply.

2 points — Response identifies the problem as a recession, a fall in gross domestic product, or high unemployment and proposes that the Federal Reserve does at least one of the following: purchase bonds, decrease reserve requirements, lower the discount rate, or reduce target federal funds rate.

1 point — Response identifies the problem as a recession, a fall in gross domestic product, or high unemployment.

0 points — No appropriate response

The purpose of the scoring rubrics in the framework is to illustrate the type of response needed to obtain a given number of points. Actual rubrics used in scoring are more elaborate and will

include a number of possible options for each of the point totals. Examples of alternative rubrics for the above follow:

3 points — Response includes the identification of the problem as a recession, a fall in gross domestic product, or high unemployment; a statement that the recommended monetary policy will lower interest rates or expand the money supply; and a statement that investment and/or consumption will increase and thus increase gross domestic product.

OR

Response proposes that the Federal Reserve purchase bonds, decrease reserve requirements, lower the discount rate, or reduce the target federal funds rate, indicates that the recommended monetary policy will lower interest rates or expand the money supply; and states that the lower interest rates or greater money supply will cause an increase in investment or consumption, or both, and thus increase gross domestic product.

2 points — Response includes the identification of the problem as a recession, a fall in gross domestic product, or high unemployment and a statement that the recommended monetary policy will lower interest rates or expand the money supply.

OR

Response includes a statement that monetary policy will lower interest rates or expand the money supply and that investment and/or consumption will increase and thus increase gross domestic product.

The International Economy

Item Number	Content Area	Benchmark	Cognitive Category	Context	Format	Key
7	International Economy	3.5.1	Knowing	None	MC	C

Why are businesses in two different countries most likely to trade with each other?

A. They know that although one business will be hurt from trading, the other will be better off, and they both hope to be the winner.
B. Businesses are unable to sell their products in their own countries.
C. Each business expects to be better off as a result of the trade.
D. Their respective governments require them to do so.

Item Number	Content Area	Benchmark	Cognitive Category	Context	Format	Key
8	International Economy	3.5.2	Applying	Public	MC	A

If Mexico were to place a tariff on automobiles imported from the United States, the price and the quantity of automobiles imported into Mexico from the United States are most likely to change in which of the following ways?

	Price	Quantity
A.	Increase	decrease
B.	Increase	increase
C.	Decrease	decrease
D.	Decrease	increase

Item Number	Content Area	Benchmark	Cognitive Category	Context	Format	Key
9	International Economy	3.7.2	Reasoning	None	ECR	Rubric

Use the following information on exchange rates in June and December to answer questions A and B.

PRICE OF THE UNITED STATES DOLLAR IN FOREIGN CURRENCY

Foreign Currency	June	December
European Euro	1.08	1.10
Mexican Peso	9.506.00	9.606.10

A. In terms of the Euro and the Peso, what happened to the value of the U.S. dollar between June and December?

B. What will most likely happen to U.S. exports and imports? Explain why.

Scoring Rubric

3 points — Response includes a statement that the value of the dollar increased, a statement that United States exports will decrease and United States. imports will increase, and an explanation of the cause of the change in exports and imports. An increase in the value of the dollar will make United States goods relatively more expensive for foreigners to buy and thus the purchase of exports will decrease. Goods from abroad will be less expensive and thus more will be bought.

2 points — Response includes a statement that the value of the dollar increased and one of the following statements: United States exports will decrease and United States imports will increase; exports will decrease because they are relatively more expensive for foreigners to buy; or imports will increase because they are now relatively less costly for United States citizens to buy.

1 point — Response indicates that the value of the dollar has increased or that it takes more Euros and Pesos to buy a U.S. dollar.

0 points No appropriate response

Appendix H

FRAMEWORK DEVELOPMENT PROCESS

In September 2001, NAGB awarded a contract to the American Institutes for Research (AIR) to conduct the NAEP Economics project. AIR subcontracted with the National Council on Economic Education (NCEE) and the Council of Chief State School Officers (CCSSO) to develop recommendations to NAGB for the 2006 Economics Assessment.

To develop the recommendations, the Project Management Team, composed of leadership from the contractor and subcontractors, directed the work of three committees: a Steering Committee, a Planning Committee, and a Technical Advisory Panel (TAP) to make recommendations to NAGB on the following:

- A framework for the assessment
- Assessment and item specifications based on the framework
- Background variables to be collected from students, teachers, and school administrators

The Steering Committee consisted of 15 members, the Planning Committee had 19 members, and the Technical Advisory Panel had 4 members. The Steering and Planning Committees included secondary teachers and administrators, college and university teachers, representatives of professional education organizations and the private sector, policymakers, and members of the public. The Technical Advisory Panel included educational measurement experts and psychometricians from the United States and Canada. Members of each project committee and the Project Management Team are listed in Appendices B-E.

The process for developing the recommendations included the following activities:

- Developing an issues paper
- Holding a series of meetings of the various committees to develop draft documents
- Developing and maintaining a project website to facilitate communication and to review documents
- Conducting a broad-based national review of the draft framework

Issues Paper. Prior to the first meeting of the committees, a paper highlighting key issues in developing the framework and specifications for the economics assessment was developed for use as a point of initial discussion.

Meetings. The Steering Committee met three times to set the overall guidelines for the project and to act in an advisory capacity, review materials, and recommend revisions and changes. At each of these meetings, some time was spent in separate sessions, and some time was in joint meetings with the Planning Committee.

The Planning Committee met five times and designed the framework, the specifications, and the background variables document with the assistance of the Technical Advisory Panel and the Project Management Team. The schedule of meetings is shown below.

November 28-30, 2001	Steering and Planning Committees
January 17-18, 2002	Planning Committee, TAP representative
March 6-8, 2002	Planning and Steering Committees, full TAP
June 6-7, 2002	Planning Committee, full TAP
July 9-10, 2002	Planning and Steering Committees, TAP representative

Web Site. A project web site also was designed to facilitate communication and document review. The web site contained areas for public access, as well as areas for project committee use. During the development process, staff and committee members were able to post to the project committee areas iterations of the Issues Paper, framework, and specifications; request and offer feedback; and hold online discussions. Members of the public could visit the publicly accessible areas to view later iterations of the Issues Paper and the framework, offer recommendations, and obtain information about development milestones and meeting dates.

National Review. In addition to being posted on the website and reviewed by members of the committees and the Project Management Team, the framework was presented in 10 national review forums. Hundreds of stakeholders—educators, business and labor representatives, students, and policymakers—were involved in the evolution of the Framework Development Project through their participation in the national review forums and other reviews of the document. The dates, venues, and audiences for the national review are shown in the following table.

Venue	Place and Date	Audience
Midwest Economics Educators Conference	Federal Reserve Bank St. Louis, MO April 11	College and university professors of economics
AFL-CIO/ United Association for Labor Education Annual Education Conference	Wilshire Grand Hotel Los Angeles, CA April 11	Union and non-union conference attendees with an interest in labor education
Meeting of the Wisconsin Governor's Task Force on Financial Education	Pyle Center Madison, WI April 11	Task Force members, representing business, government, education, foundations, and the general public
Consumer Education Committee of the American Council on Consumer Interests	Places and times of their own choosing	Committee co-chairs
Meeting of various staff at The Conference Board	The Conference Board New York, NY May 3	An economist, a research statistician, two research librarians, and Human Resources and other staff
Spring meeting of the Education Information Advisory Committee (EIAC)	DoubleTree Crystal City Hotel Arlington, VA May 6	State Assessment Directors and various staff and observers
Meeting of The Conference Board's Business/ Education Council	Willard Inter-Continental Hotel Washington, DC May 8	Corporate executives and education leaders
Spring conference of the Illinois Association of School Economics Teachers	Holiday Inn Select Tinley Park, IL May 10	Illinois secondary school economics teachers and potential economics teachers
National Summit on Economic and Financial Literacy	National Press Club Washington, DC May 14	Business people, academics, National Council on Economic Education (NCEE) Council Directors, and the general public
NCEE/ Goldman Sachs Foundation Economic Challenge	High School of Economics and Finance New York, NY May 19	Secondary school economics students, both regular and Advanced Placement, and their teachers

The timeline for the project was as follows:

- Fall 2001 -- NAGB awarded the Economics Contract and delivered its charge to the project Steering Committee. Project consultants developed an issues paper to guide committee discussions.

- Fall 2001 through Winter 2002 -- The Steering Committee and the Planning Committee met several times. The Steering Committee developed the "Charge" to guide the work of the Planning Committee. The Planning Committee developed the framework and specifications for the assessment.

- April and May 2002 -- The framework was made available for national review.

- November 2001, March and May 2002 – Project staff briefed the NAGB Assessment Development Committee and the full Board on the project's status, preparation of draft documents, and related issues.

- Summer 2002 -- Full recommendations for the assessment framework, specifications, and background variables were prepared and submitted to NAGB.

- August 2002 -- NAGB took final action on recommendations regarding the 2006 NAEP Economics Assessment – on the Framework, Specifications, and Background Variables.

Appendix I

ACKNOWLEDGMENTS

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